

STRUCTURAL NOTES

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-02-03M	2004	10	15

1. GENERAL SPECIFICATIONS: HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION, 1994, TOGETHER WITH SPECIAL PROVISIONS FOR THIS CONTRACT.
2. DESIGN SPECIFICATIONS: "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS," SECOND EDITION, 1998 AND ITS SUBSEQUENT INTERIM REVISIONS.
3. LOADS:

A. DEAD LOAD: AN ALLOWANCE OF 2 INCHES FOR ASPHALT CONCRETE PAVEMENT HAS BEEN PROVIDED FOR IN THE DESIGN

B. LIVE LOAD: HL-93

C. RAILING TEST LEVEL = TL-2
4. MATERIALS:

A. MINIMUM CONCRETE COMPRESSIVE STRENGTH (AT 28 DAYS) SHALL BE 4,000 PSI.

B. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, UNLESS OTHERWISE NOTED.
5. REINFORCEMENT:

A. UNLESS OTHERWISE NOTED, THE COVERING MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF ANY REINFORCING BARS SHALL BE AS FOLLOWS:

1) SLABS:

A) TOP BARS = 2"

B) BOTTOM BARS = 1-1/4"

2) PARAPETS = 2"

3) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH = 3"

4) DRILLED SHAFTS = 4"

B. REINFORCING BARS SHALL BE DETAILED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 2ND EDITION, 1998, INCLUDING SUBSEQUENT INTERIM REVISIONS, UNLESS OTHERWISE NOTED.

C. MINIMUM CLEAR SPACING BETWEEN PARALLEL BARS SHALL BE 1-1/2 TIMES THE DIAMETER OF BAR (FOR NON-BUNDLED BARS) OR 1-1/2 TIMES THE DIAMETER DERIVED FROM THE EQUIVALENT TOTAL AREA OF THE BARS (FOR BUNDLED BARS), BUT IN NO CASE SHALL THE CLEAR DISTANCE BETWEEN THE PARALLEL BARS BE LESS THAN 1-1/2 TIMES THE MAXIMUM SIZE OF THE COARSE AGGREGATE OR 1-1/2 INCHES.

D. ALL DIMENSIONS RELATING TO REINFORCING BARS (E.G. SPACING OF BARS, ETC.) ARE TO CENTERS OF BARS, UNLESS OTHERWISE NOTED.

E. REINFORCING BARS SHALL BE SECURELY TIED AT ALL INTERSECTIONS AND LAP SPLICES EXCEPT WHERE THE SPACING OF INTERSECTIONS IS LESS THAN ONE FOOT IN EACH DIRECTION, IN WHICH CASE ALTERNATE INTERSECTIONS SHALL BE TIED.
6. CONSTRUCTION NOTES:

A. SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

B. UNLESS OTHERWISE NOTED, ALL VERTICAL DIMENSIONS ARE MEASURED PLUMB.

C. THE CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS BEFORE COMMENCING WITH WORK.

D. FOR CONCRETE FINISH, SEE STANDARD SPECIFICATIONS.

E. CONSTRUCTION JOINTS MAY BE RELOCATED OR ADDITIONAL ONES ADDED, SUBJECT TO THE APPROVAL OF THE ENGINEER.

F. UNLESS OTHERWISE NOTED, ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4" x 3/4".
7. FOUNDATION:

THESE FOUNDATION NOTES WERE BASED ON RECOMMENDATIONS CONTAINED IN A FOUNDATION INVESTIGATION REPORT BY GEOLABS, INC. (PHONE: 808-841-5064) DATED JANUARY 26, 2004. THE REPORT SHALL BE CONSIDERED AS PART OF THE CONSTRUCTION DOCUMENTS AND ITS RECOMMENDATIONS SHALL BE IMPLEMENTED, UNLESS OTHERWISE DIRECTED BY THE SOILS ENGINEER.

A. DRILLED SHAFTS:

1) THE DRILLED SHAFT ESTIMATED LENGTHS SHOWN ON THE PLANS ARE BASED ON THE BORING DATA. THE ACTUAL DRILLED SHAFT LENGTH COULD CHANGE DUE TO VARYING SUBSURFACE CONDITIONS. SOILS ENGINEER OF RECORD SHALL BE PRESENT DURING THE DRILLING OPERATION TO DETERMINE THAT THE ACTUAL SUBSURFACE CONDITIONS ARE CONSISTENT WITH THE CONDITIONS ASSUMED FOR DESIGN. THE CONTRACTOR SHALL MAKE PROVISIONS TO ACCOUNT FOR VARIATIONS IN THE FINAL DRILLED SHAFT LENGTHS.

2) THE CONTRACTOR SHALL EXERCISE CARE IN DRILLING THE SHAFT HOLES AND IN PLACING CONCRETE INTO THE HOLES. THE SUBSURFACE CONDITIONS CONSISTED OF SAPROLITE AND WEATHERED BASALT FORMATIONS. THE DEGREE OF WEATHERING IN THE BASALT FORMATION IS LIKELY TO VARY SIGNIFICANTLY BY NATURE, WITH LOCALIZED HARD LAYERS AND RELATIVELY UNWEATHERED ZONES. THEREFORE, THE CONTRACTOR SHALL ANTICIPATE DIFFICULT DRILLING CONDITIONS IN THESE SUBSURFACE CONDITIONS.

3) CAVING-IN OF THE MATERIALS MAY OCCUR DURING DRILLING OPERATIONS DUE TO SEEPAGE WATER WHICH HAS BEEN OBSERVED ALONG THE FACES OF THE MAUKA CUT SLOPES. TO REDUCE THE POTENTIAL FOR SIGNIFICANT CAVING-IN OF THE HOLES, TEMPORARY CASING OF THE DRILLED HOLES MAY BE NECESSARY.

4) DRILLING SHALL NOT BE CONDUCTED BY METHODS UTILIZING DRILLING FLUIDS.

5) CONCRETE FOR DRILLED SHAFTS SHALL BE PLACED WITHIN 24 HOURS AFTER DRILLING TO REDUCE THE POTENTIAL FOR CAVING IN.

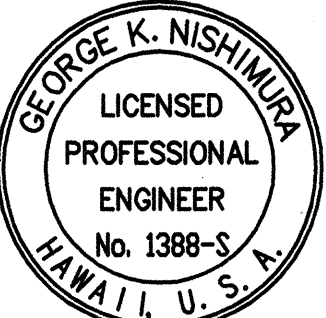
6) SINCE GROUNDWATER (SEEPAGE WATER) MAY BE ENCOUNTERED IN THE DRILLED HOLES, PLACEMENT OF CONCRETE SHALL BE BY TREMIE METHODS. A MINIMUM OF 5 FEET OF CONCRETE HEAD SHALL BE MAINTAINED ABOVE THE BOTTOM OF THE TREMIE PIPE DURING PLACEMENT OF CONCRETE.
8. THE CONTRACTOR SHALL BE AWARE THAT THE BRIDGES ON ROUTE 360, HANA HIGHWAY HAVE A POSTED WEIGHT LIMIT OF 10 TONS MAXIMUM.

ABBREVIATIONS

#	NUMBER OR POUND	LB., LBS.	POUND, POUNDS
A.B.	ANCHOR BOLT	L.F.	LINEAR FEET
A.C.	ASPHALT CONCRETE	L.S.	LUMP SUM
AZ.	AZIMUTH	MAX.	MAXIMUM
BOT., BOTT., B	BOTTOM	MIN.	MINIMUM
C.J.	CONSTRUCTION JOINT	NO., #	NUMBER
Q	CENTERLINE	N.T.S.	NOT TO SCALE
C.G.	CENTER OF GRAVITY	O.C.	ON CENTER
CLR., CL.	CLEAR		
CONC.	CONCRETE	PCF	POUNDS PER CUBIC FEET
CONT.	CONTINUOUS	PL., P	PLATE
C.Y.	CUBIC YARD	PSF	POUNDS PER SQUARE FEET
		PSI	POUNDS PER SQUARE INCH
DBL.	DOUBLE	PVC.	POLYVINYL CHLORIDE
DET.	DETAIL		
D.I.	DUCTILE IRON	R, RAD.	RADIUS
DIA.	DIAMETER	REBAR	REINFORCING BAR
DN.	DOWN	REF.	REFERENCE
DWG.	DRAWING	REINF.	REINFORCED, REINFORCING,
			REINFORCEMENT
E.F.	EACH FACE	REQ'D.	REQUIRED
ELEV., EL.	ELEVATION	R.O.W.	RIGHT-OF-WAY
E.W.	EACH WAY		
EXP.	EXPANSION		
F.B.	FLAT BAR	SHT.	SHEET
G	GIRDER	SL.	SLOPE
GALV.	GALVANIZED	STA.	STATION
		STD.	STANDARD
HORIZ., H	HORIZONTAL	STIRR.	STIRRUP
IN.	INCH	SYMM., SYMM.	SYMMETRICAL
JT.	JOINT	THK., TH.	THICK
K	KIPS	TYP.	TYPICAL
KSI	KIPS PER SQUARE INCH	VERT., V	VERTICAL
		W/	WITH
		W.S.	WHITE STRIPE

SUMMARY OF ESTIMATED QUANTITIES

ITEM NO.	CONTRACT ITEM	APPROX. QUANTITY	UNIT
206.0100	STRUCTURE EXCAVATION FOR CONCRETE SUPPORT	330	C.Y.
206.0700	STRUCTURE BACKFILL FOR CONCRETE SUPPORT	30	C.Y.
503.1000	CONCRETE FOR CONCRETE SUPPORT	230	(C.Y.) L.S.
507.9000	TEXTURED CONCRETE BARRIER	105	L.F.
511.0100	FURNISHING DRILLED SHAFT DRILLING EQUIPMENT	L.S.	L.S.
511.0200	DRILLED SHAFT - 60-INCH DIAMETER	450	L.F.
511.0300	UNCLASSIFIED SHAFT EXCAVATION	450	L.F.



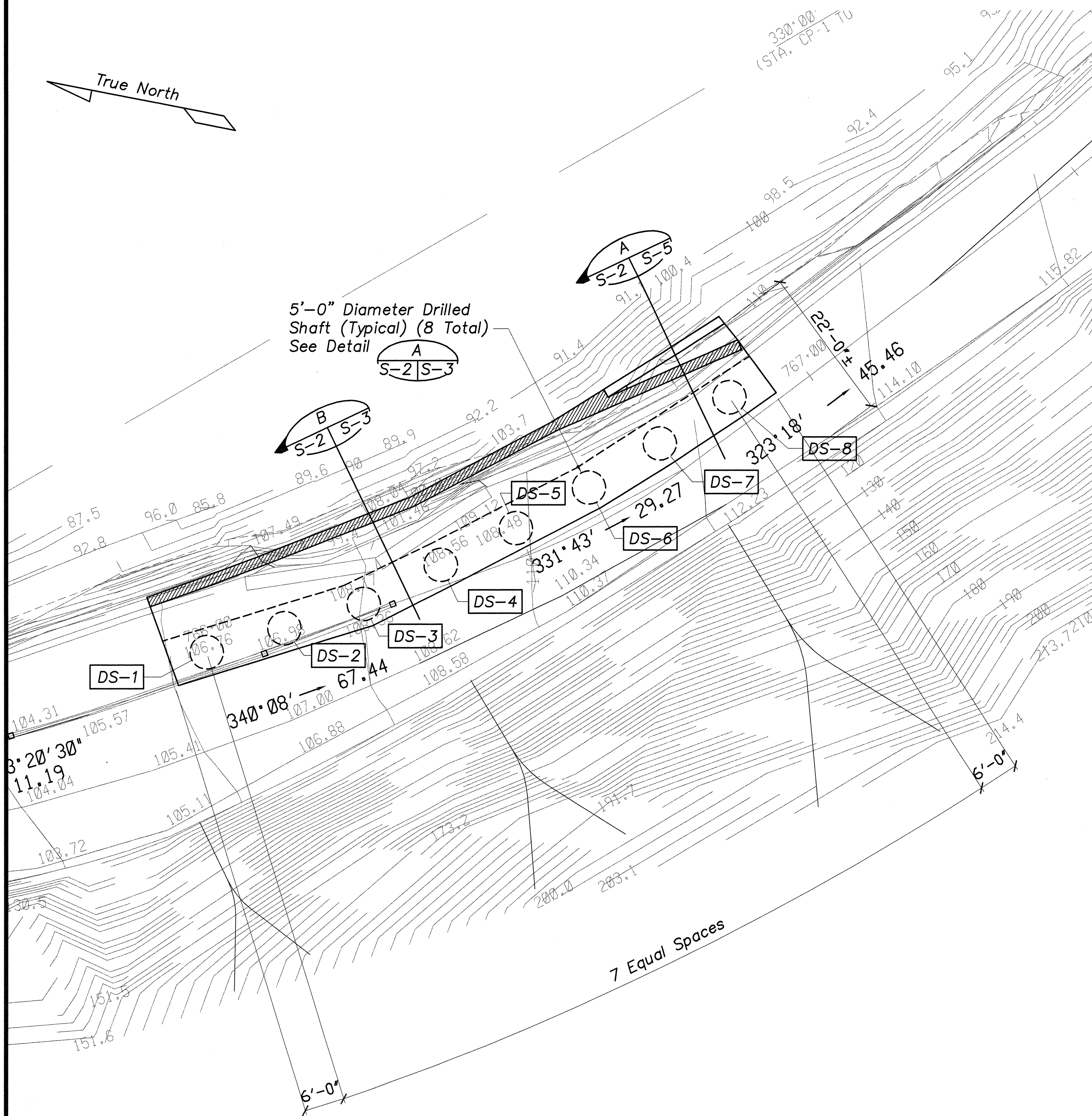
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EXPIRATION DATE: 4/30/06

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRUCTURAL NOTES, ABBREVIATIONS,
SUMMARY OF ESTIMATED QUANTITIES

HANA HIGHWAY
REPAIRS AND MAINTENANCE
PROJECT NO. 360AB-02-03M

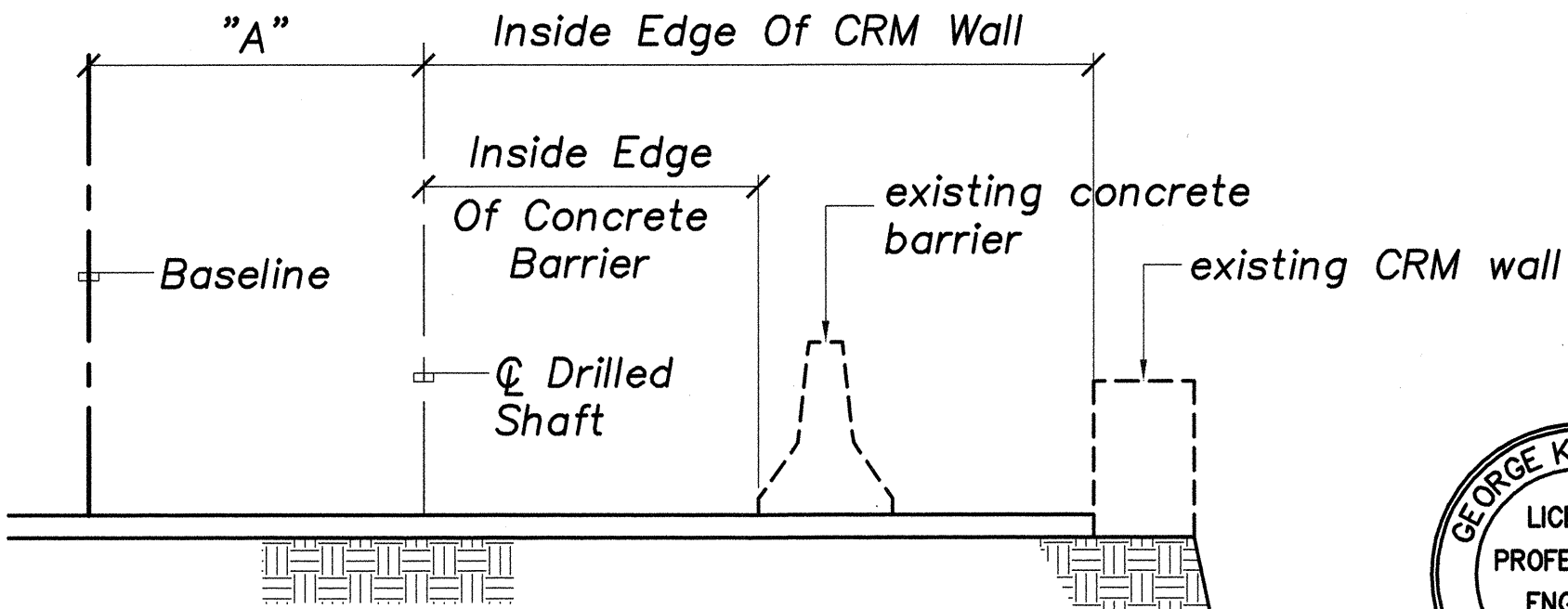
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SHEET No. S-1 OF 15 SHEETS



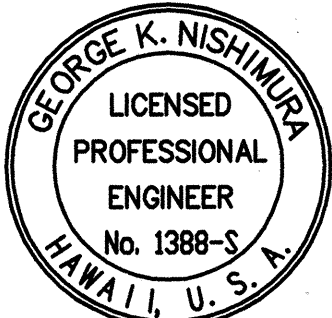
- Notes:
1. Contractor Shall Use The Offset Distance "A" As Shown On The Drill Shaft Location Table To Locate The Drill Shafts.
 2. Contractor Shall Use The Verification Offset Distance To Verify The Location Of The Drill Shafts.
 3. Contractor Shall Notify The Engineer Of Any Discrepancies Between The Offset Dimensions.
 4. Contractor Shall Not Move Any Existing Features Until The Verification Offset Distances Have Been Checked. At His Option, The Contractor May Mark The Locations Of Any Existing Feature That He Intends To Move Prior To Verifying Any Offset Distances.

DRILL SHAFT LOCATION TABLE				
Drill Shaft	Baseline Station	Offset Distance "A" (℄ Drill Shaft To ℄)	Verification Offset Distance (℄ Drill Shaft To Edge Of Existing Feature)	Existing Feature
DS-1	765+99.75	2.71' Left	9.0'	CRM Wall
DS-2	766+11.89	2.12' Left	6.4'	Concrete Barrier
DS-3	766+24.27	1.51' Left	4.6'	Concrete Barrier
DS-4	766+37.09	3.08' Left	4.3'	Concrete Barrier
DS-5	766+49.60	4.41' Left	7.3'	CRM Wall
DS-6	766+62.72	5.36' Left	5.5'	CRM Wall
DS-7	766+75.93	5.30' Left	4.5'	CRM Wall
DS-8	766+88.46	4.63' Left	4.5'	CRM Wall



PLAN AT MP 19.1
Scale: 1"=10'-0"

DATE: _____
SURVEY PLOTTED BY: _____
DRAWN BY: _____
DESIGNED BY: _____
CHECKED BY: _____
ORIGINAL PLAN NOTE BOOK No. _____



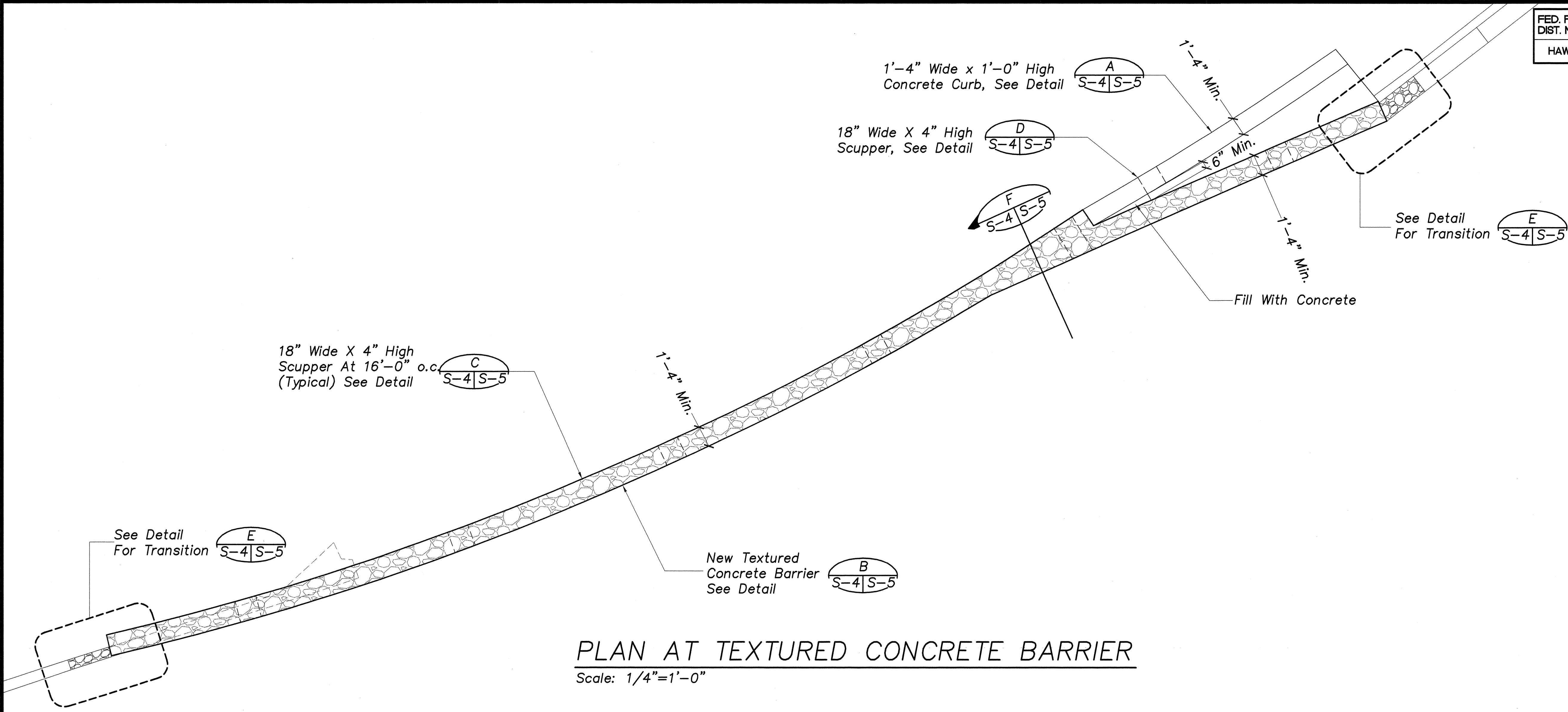
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EXPIRATION DATE: 4/30/06

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PLAN AT MP19.1

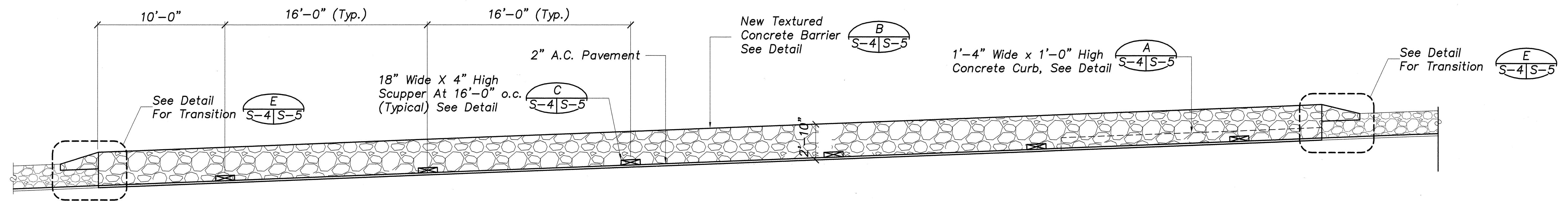
HANA HIGHWAY
REPAIRS AND MAINTENANCE
PROJECT NO. 360AB-02-03M

Scale: As Noted Date: May, 2004
SHEET No. S-2 OF 15 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-02-03M	2004	13	15

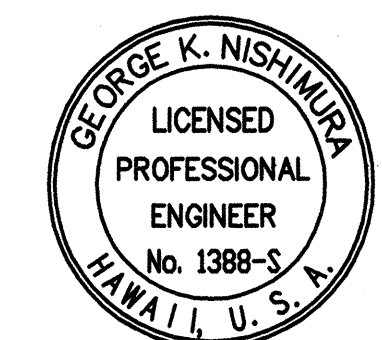


PLAN AT TEXTURED CONCRETE BARRIER
Scale: 1/4"=1'-0"



ELEVATION AT TEXTURED CONCRETE BARRIER
Scale: 1/4"=1'-0"

ORIGINAL PLAN	DATE
NO.	



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

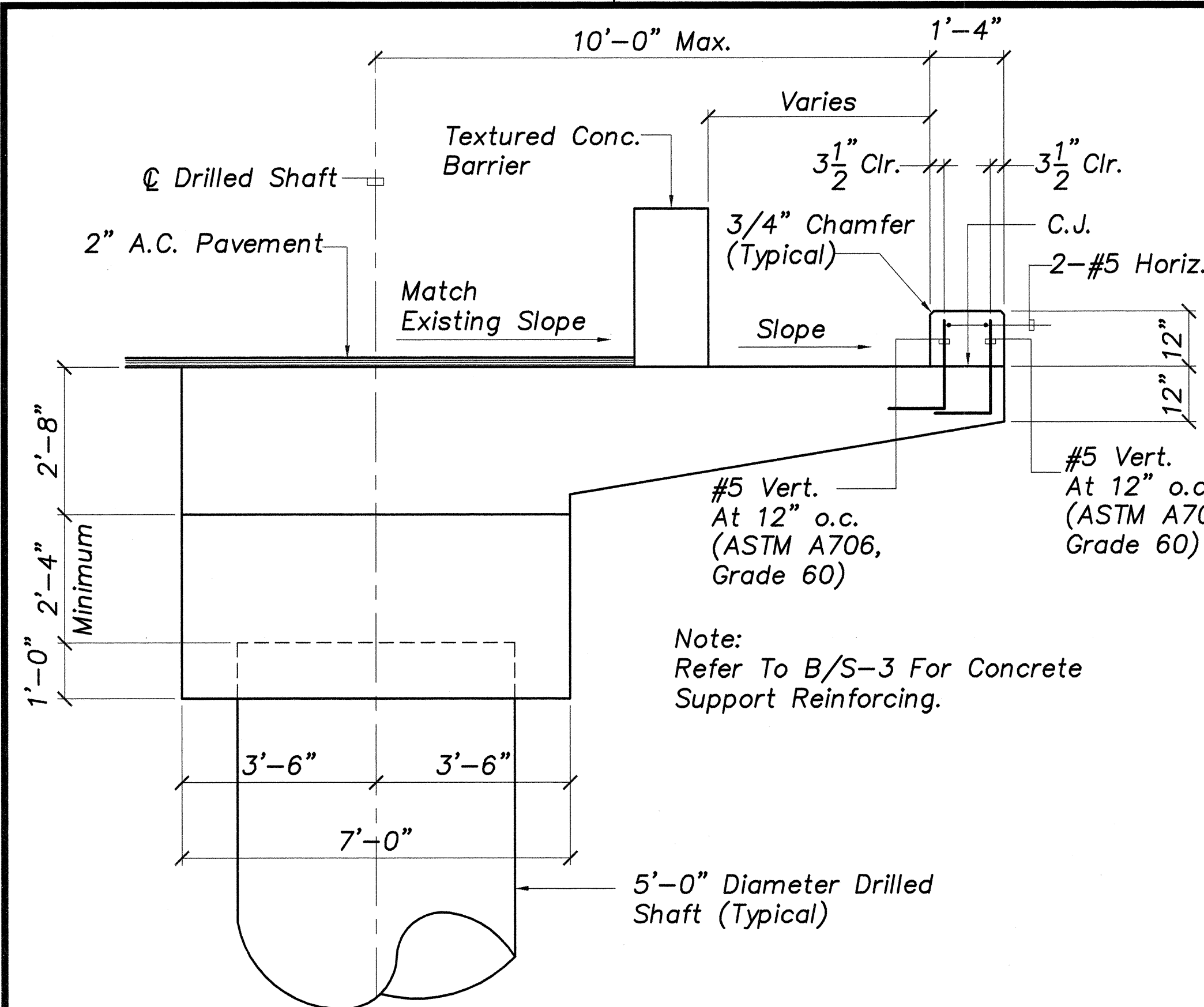
**PLAN AT TEXTURED CONCRETE BARRIER,
ELEVATION AT TEXTURED CONCRETE BARRIER**

HANA HIGHWAY
REPAIRS AND MAINTENANCE
PROJECT NO. 360AB-02-03M

Scale: As Noted Date: May, 2004

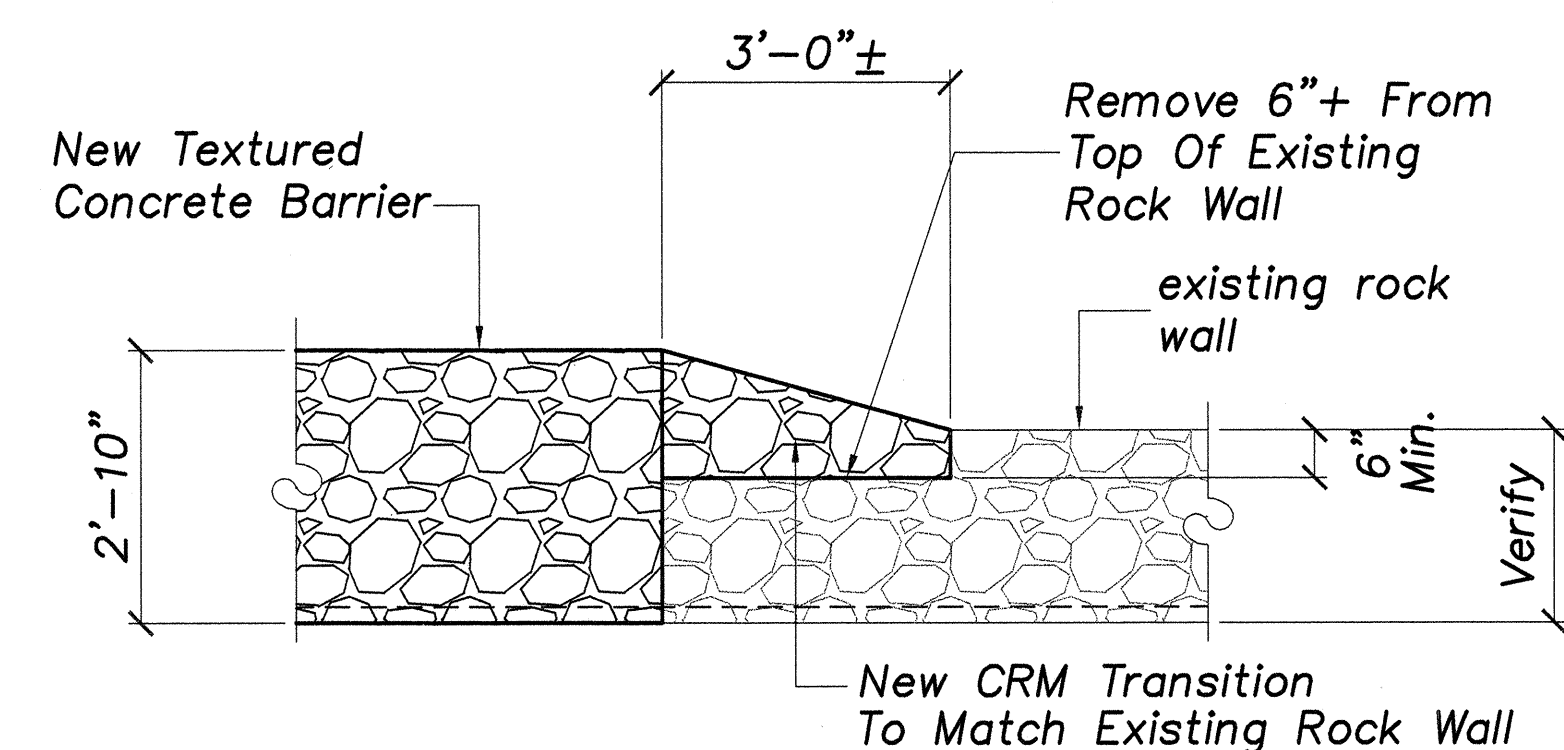
SHEET No. S-4 OF 15 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-02-03M	2004	14	15



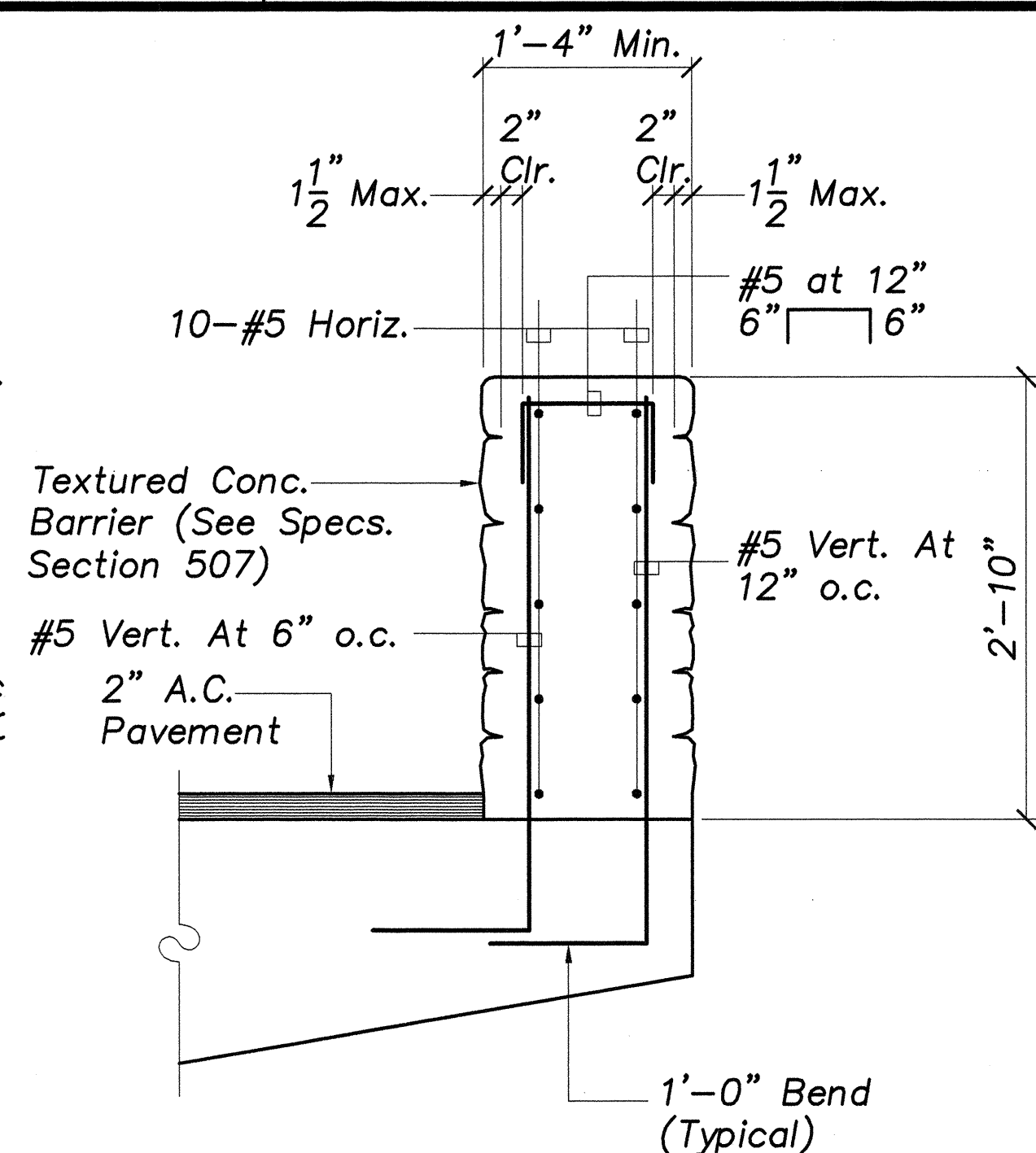
SECTION AT CONCRETE CURB

S-2, S-4 | S-5 Scale: 1/2"=1'-0"



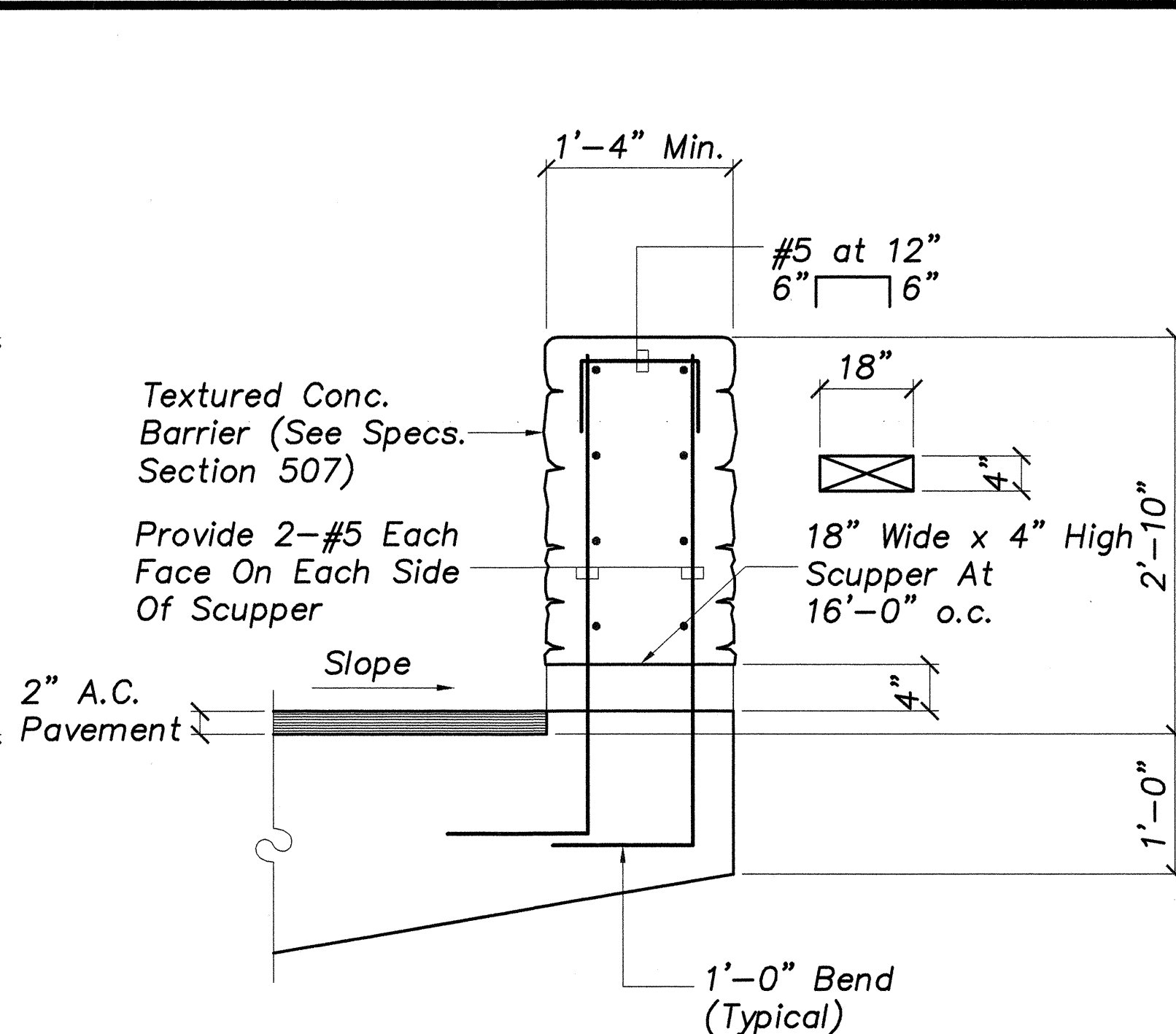
DETAIL AT WALL TRANSITION

S-4 | S-5 Scale: 1/2"=1'-0"



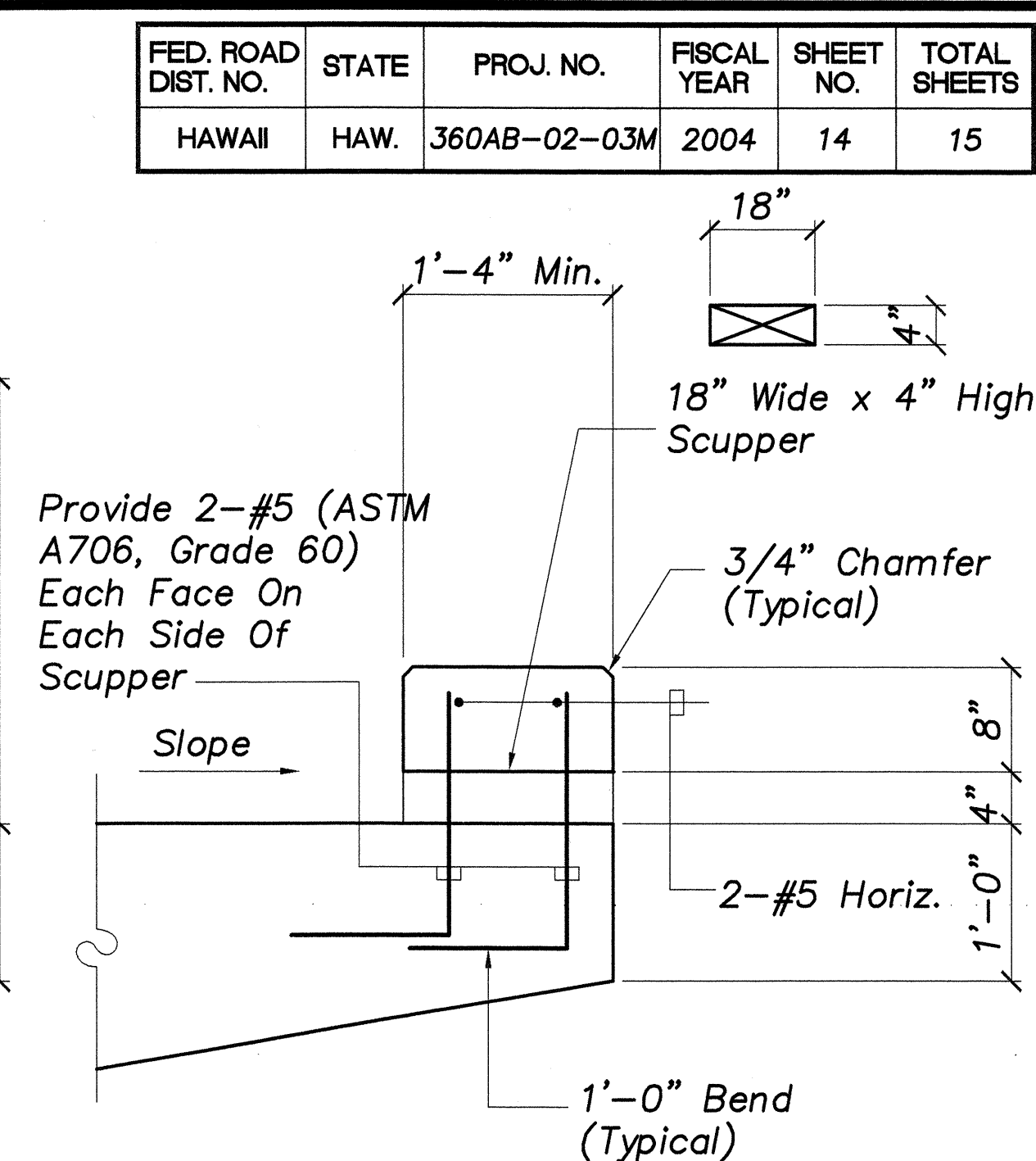
TEXTURED CONC. BARRIER DETAIL

S-2 | S-5 Scale: 1"=1'-0"



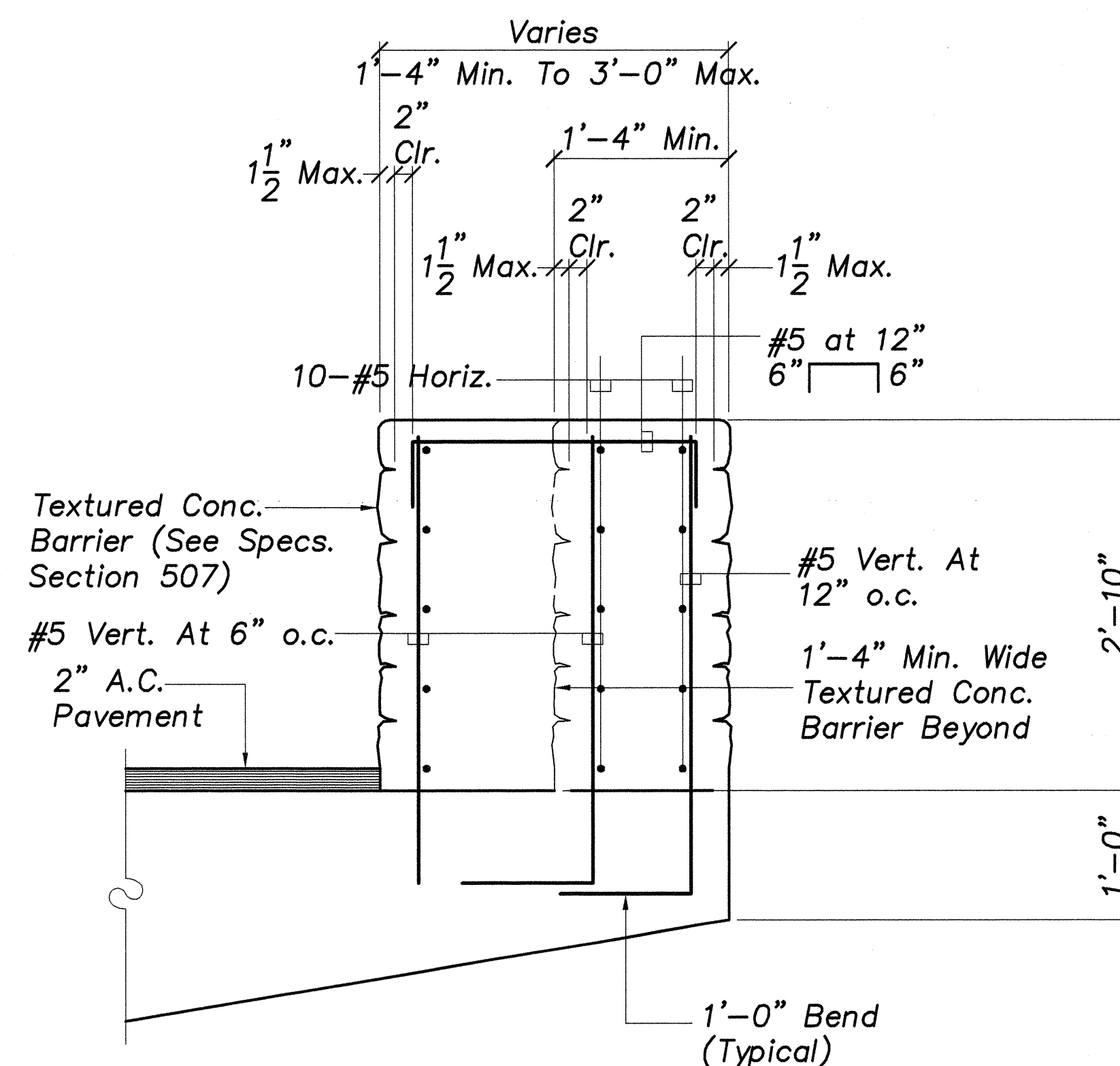
SCUPPER DETAIL

S-4 | S-5 Scale: 1"=1'-0"



SCUPPER DETAIL

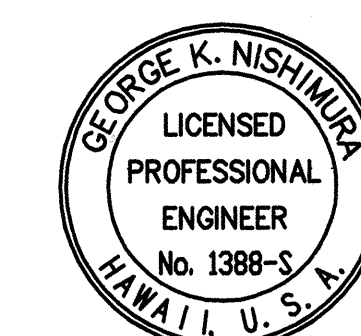
S-4 | S-5 Scale: 1"=1'-0"



SECTION AT TEXTURED CONCRETE BARRIER TAPER

S-4 | S-5 Scale: 1"=1'-0"

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	



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EXPIRATION DATE: 4/30/06

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MISCELLANEOUS DETAILS AND SECTIONS

HANA HIGHWAY
REPAIRS AND MAINTENANCE
PROJECT NO. 360AB-02-03M

Scale: As Noted Date: May, 2004
SHEET No. S-5 OF 15 SHEETS